

**DISPOSABLE FORMWORK FOR CIRCULAR SECTION COLUMNS****DESCRIPTION****OBJECT OF THE INVENTION**

5 The present invention refers to a disposable formwork, especially conceived to produce cylindrical columns, for example using reinforced concrete.

The object of the invention is to achieve a formwork that allows perfectly cylindrical columns to be achieved.

**BACKGROUND TO THE INVENTION**

10 To build a column on the basis of, for example, reinforced concrete, it is necessary to have a mould or formwork that gives the final configuration and size thereto, and said formwork must integrate two different but complementary characteristics: on the one hand to  
15 ensure the column's perfect surface finish and, on the other hand, to do so at a sufficiently low cost so as to make it viable for the builder, especially when comprising disposable formwork.

Formwork offering the characteristics described  
20 above is disclosed in the Spanish invention patent with application number 9800419, of which the applicant is titleholder, which discloses disposable formwork for columns structured as a tubular body or core made on the basis of four pieces of expanded polystyrene, fitted  
25 together by means of adhesive strip throughout their connecting edges, a tubular core that is internally covered with a plastic sheet constituting an impermeable barrier, which is attached to said core by means of a layer of adhesive, whereas externally said tubular core  
30 is reinforced with a grid-like support structure, consisting of fibreglass mesh helicoidally wrapped around the tubular core and also attached thereto by means of adhesive, in such a way that said mesh confers the appropriate mechanical stability to the ensemble against  
35 the radial pressure generated by the mass of concrete to

be poured inside the formwork.

An improvement of this formwork is contained in the certificate of addition to the abovementioned patent, with application number 9802487, which contemplates  
5 replacing the plastic sheet that forms the impermeable barrier attached to the core, by a series of wooden panels that are plastic-coated on their internal surface, or of rigid plastic plates, that join together with the help of adhesive strips conveniently mounted on their  
10 internal surface corresponding to the adjacent edges between plates, thus producing an internal tubular body with a perfectly smooth, waterproof surface, whereon, subsequently and externally, the polystyrene pieces constituting the central rigid tubular body are arranged  
15 and whereon, in turn and finally, the external support layer is established on the basis of the abovementioned helicoidally wound fibreglass mesh, providing the formwork with the appropriate mechanical resistance.

These two types of formwork are designed to produce  
20 square or rectangular section columns, but obviously on many occasions cylindrical columns must be produced, in other words, columns with a circular section. To this effect, patent invention with application number 200000010, of the same applicant, envisages increasing  
25 considerably the number of rigid plates that conform the formwork, specifically by turning them into very narrow strips, which given their large number and the joints between them, tend towards a circumferential section, but only in tendency, given that in reality the column  
30 produced is of a polygonal section, although with a considerable number of sides, corresponding to the number of plates or strips employed.

In an attempt to simplify the construction process of this formwork tending towards a cylindrical shape,  
35 invention patent 200001776 envisages that the rigid bands

fixed using adhesive strips of the above patent are replaced by a single board, also with a plastic-coated internal surface, which is subjected to a number of longitudinal cuts on its external surface to permit the required deformation thereof, so that, in turn, it may be transformed from its original, flat configuration into a cylindrical configuration. However, these cuts or slots in its external surface make the board deform in an irregular manner, obviously most accentuated on the lines corresponding to said cuts which, in practice, entails that the final result is not a perfect cylinder either, but rather that its section is also polygonal.

Finally, the following are also worthy of note: invention patent No. 9902893 "Machine for applying fibreglass reinforcement to disposable formwork for columns", which is complemented by Invention Patent application "Formwork for prismatic or cylindrical columns" with application number 200002631, also of the applicant, which envisages that the surrounding fibreglass mesh that gives the formwork the necessary mechanical resistance be replaced by a strip of a self-adhesive nature, consisting of paper or similar, wherein the fibreglass threads would be embedded and which exclusively adopt a longitudinal arrangement (instead of forming a mesh) which, after wrapping said strip on the formwork, makes the fibreglass threads adopt an appreciably transversal arrangement with respect to the formwork's axis, thus eliminating longitudinal threads that, due to their own situation, are inoperative according to the pursued object.

#### **DESCRIPTION OF THE INVENTION**

The disposable formwork proposed by the invention, starting from the basic premise of the abovementioned patents, i.e. establishing a tubular body reinforced externally through fibreglass threads, either in the

shape of a mesh or embedded in a paper or similar support allowing the production of a perfectly cylindrical column, meaning a perfectly circular section, with an absence of any type of edge or roughness in its surface.

5 For this purpose, and in a more specific manner, the formwork is structured using a smooth rigid plastic plate, such as, for example, made of high impact polystyrene (HDPE) or other similar material, a plate that adopts a perfectly cylindrical configuration when  
10 wrapped around an inflatable assembly core, obviously of a cylindrical configuration and with an external diameter equal to the diameter of the concrete column to be produced, joining the two complementary edges of said smooth plastic plate using self-adhesive tape.

15 Optionally, and to avoid problems of deformities on this joint line, as a result of the weakness thereof, it has been contemplated to place, on the external face of the tubular body corresponding to said connection line, a strip of the same material, of about 4 or 5 cm wide and  
20 the same length as the formwork and also fixed using one or two self-adhesive tapes.

The thus produced tubular body is complemented with the external surround structure based on fibreglass threads, whether in the shape of a mesh or independent  
25 threads embedded in a paper support or similar.

The elasticity of the rigid plastic used allows its transformation into a cylinder without the need for making cuts in its external surface or any other type of manipulations and said smooth plate, precisely because of  
30 its continuous thickness, ensures a perfectly cylindrical internal surface for the formwork which, in turn, determines a perfectly cylindrical section, i.e. not polygonal, for the column to be produced.

Obviously, the inflatable nature of the assembly  
35 core that has been referred to above has the purpose of

facilitating the latter's disassembly once the formwork has been produced by deflating said core.

#### **DESCRIPTION OF THE DRAWINGS**

5 To complement the description that is being made and with the aim of contributing to a better understanding of the invention's specifications, following a preferred practical embodiment thereof, a set of drawings is included as an integral part of said description, which, by way of illustration but not delimitation, show the  
10 following:

- Figure 1.-* Shows the flat and smooth surface rigid plastic plate, which is used to produce the disposable formwork that is the object of this invention
- 15 *Figure 2.-* Shows the same flat plate of the figure above, duly fitted to the assembly core, according to a cross- section close-up.
- Figure 3.-* Shows an enlarged detail of the above figure corresponding to the area where  
20 said smooth plate closes in on itself, in the specific event of said closure being realised simply with the help of an adhesive tape.
- Figure 4.* Shows a detail similar to that of the  
25 above figure, but a reinforcing strip of the new material forming the smooth plate is used in the joint, in addition to said adhesive tape.

#### **PREFERRED EMBODIMENT OF THE INVENTION**

30 In view of the described figures and especially figure 1, we can see that in order to produce the disposable formwork proposed by the invention a smooth plate (1) of rigid plastic is used, such as, for example, rectangular, high impact polyethylene, , with a length  
35 equal to the envisaged height of the column to be

produced, with a width in turn coinciding with the evolution of the section of said column, in other words with said section's circumference.

5 This plastic plate (1) is arched or wrapped around  
an assembly core (2), cylindrical, formally and  
dimensionally coinciding with the column to be produced,  
in such a way that the plate (1) comes back into contact  
with itself along its longitudinal or vertical edges (3-  
3') adopting a tubular and perfectly cylindrical shape,  
10 which is stabilised, in principle, with the help of  
adhesive tape (4) as shown in the enlarged detail of  
figure 3.

Nonetheless, it has been envisaged that in order to  
avoid the tubular body configured by said plate (1)  
15 becoming weakened at the level of the joint (3-3'), a  
reinforcing strip (5) may be applied externally, of the  
same rigid plastic as the plate (1) and length coinciding  
with length thereof, that is fixed to it with the help  
of a pair of adhesive tapes (4-4') or a much wider single  
20 adhesive tape, as shown in the detail of figure 4, a  
strip (5) that may have a varying width but, for the  
pursued object, can have a size between 4 and 5 cm.

In any event, the tubular body thus produced is  
externally reinforced with the classic helicoidal casing  
25 on the basis of a fibreglass mesh or a series of  
fibreglass threads embedded longitudinally and  
equidistantly on a paper support or similar, to provide  
the tubular body, and especially the joint (3-3')  
thereof, with the appropriate stability and mechanical  
30 resistance against radial pressure exerted by the  
concrete when poured inside the formwork, obviously after  
first removing the core (2) used during its assembly, and  
whose inflatable nature allows for an incredibly fast and  
simple disassembly.